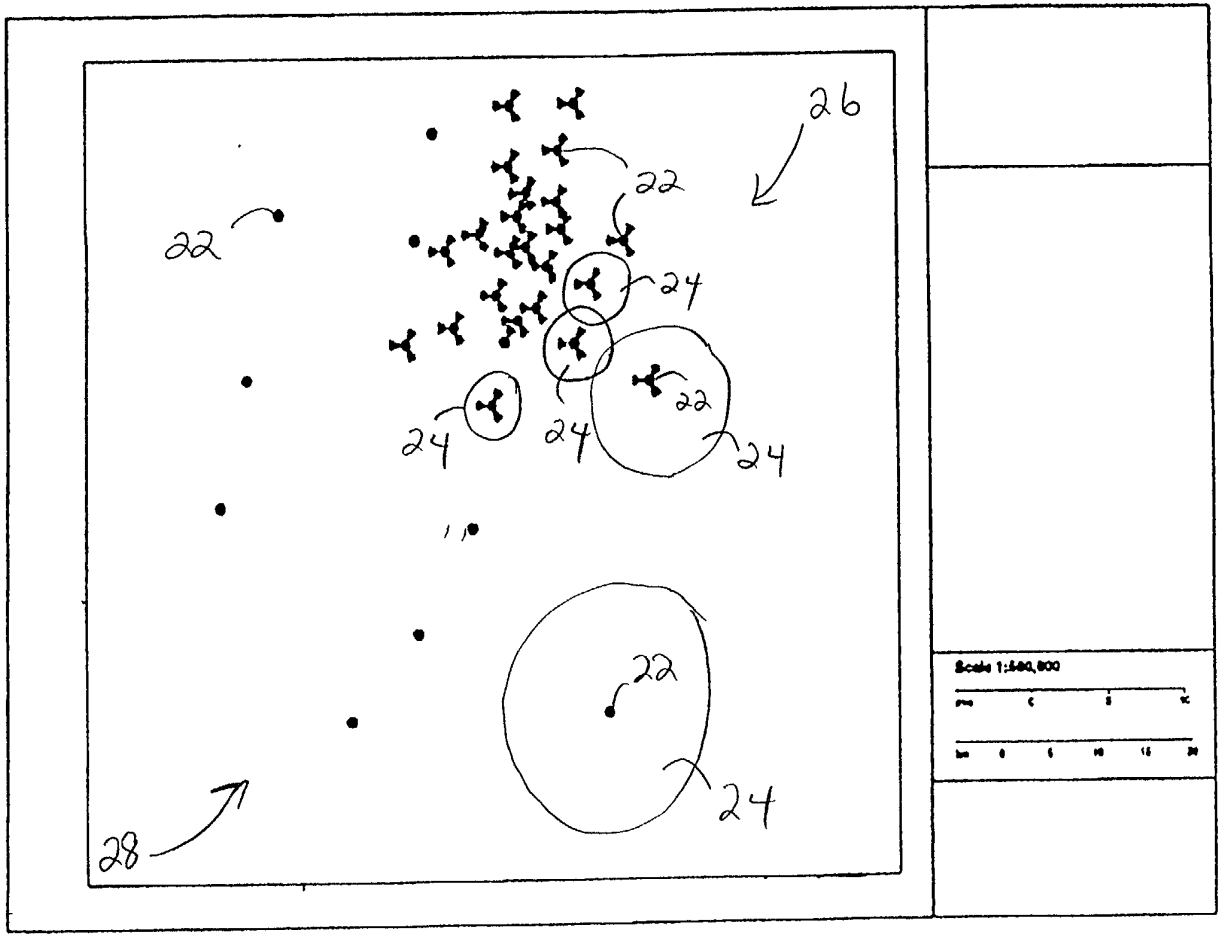
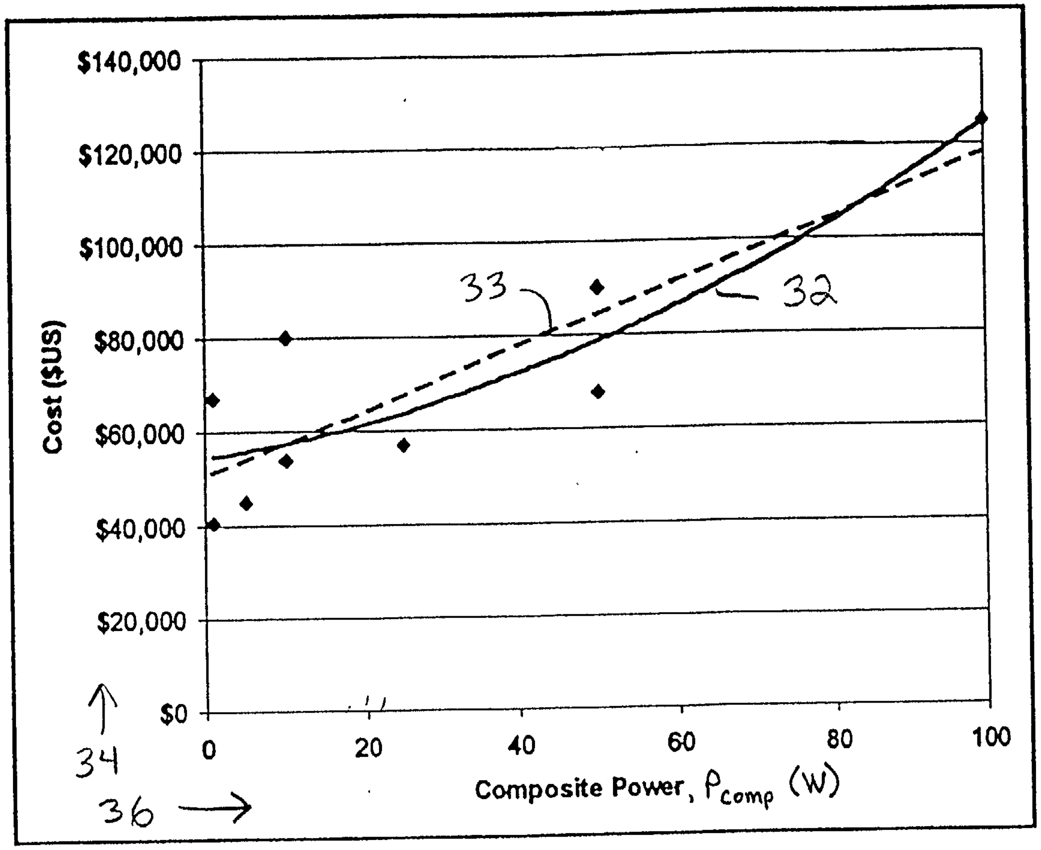


FIG. 1

20


$140,000
$120,000
$100,000
$80,000
$60,000
$40,000
$20,000
$0
Cost ($US)
0
20
40
60
80
100
Composite Power, P_{comp} (W)
33
32
34
36

30

FIG. 2

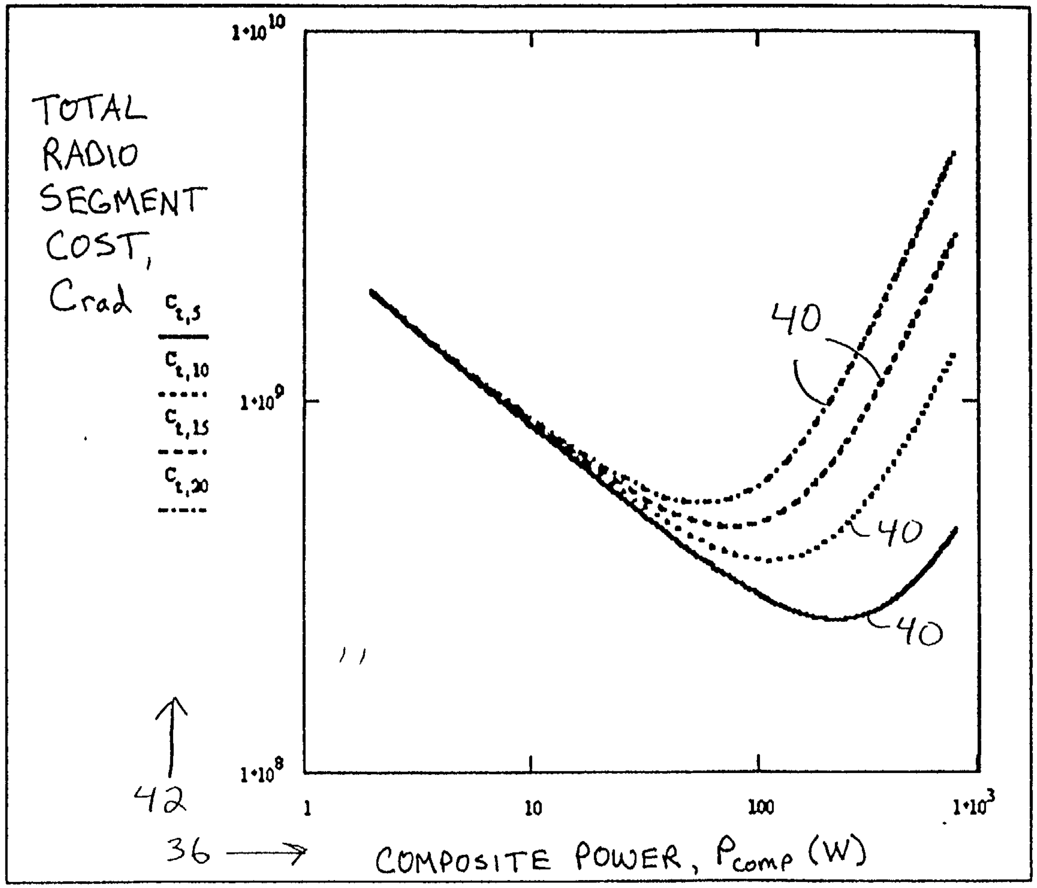
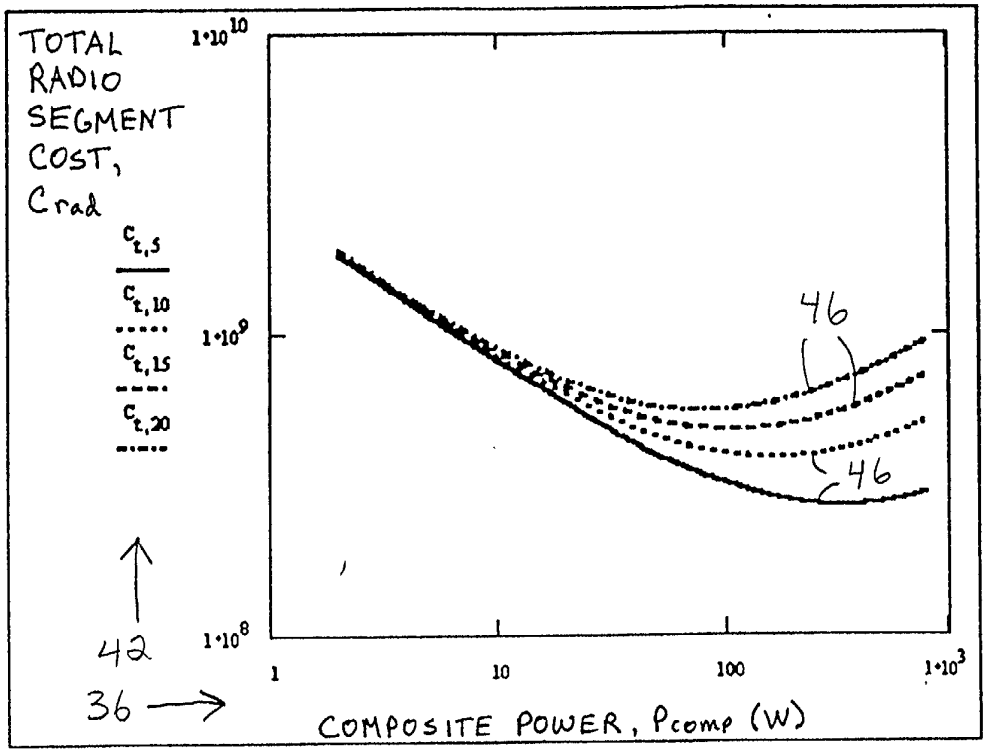

TOTAL RADIO SEGMENT COST, Crad
$c_{t,5}$
$c_{t,10}$
$c_{t,15}$
$c_{t,20}$
1·10^10
1·10^9
1·10^8
1
10
100
1·10^3
40
40
40
42
36
COMPOSITE POWER, P_{comp} (W)
38

FIG. 3


TOTAL RADIO SEGMENT COST, Crad
$C_{t,5}$
$C_{t,10}$
$C_{t,15}$
$C_{t,20}$
42
36
$1 \cdot 10^{10}$
$1 \cdot 10^{9}$
$1 \cdot 10^{8}$
1
10
100
$1 \cdot 10^{3}$
COMPOSITE POWER, Pcomp (W)
46
46

44

FIG. 4

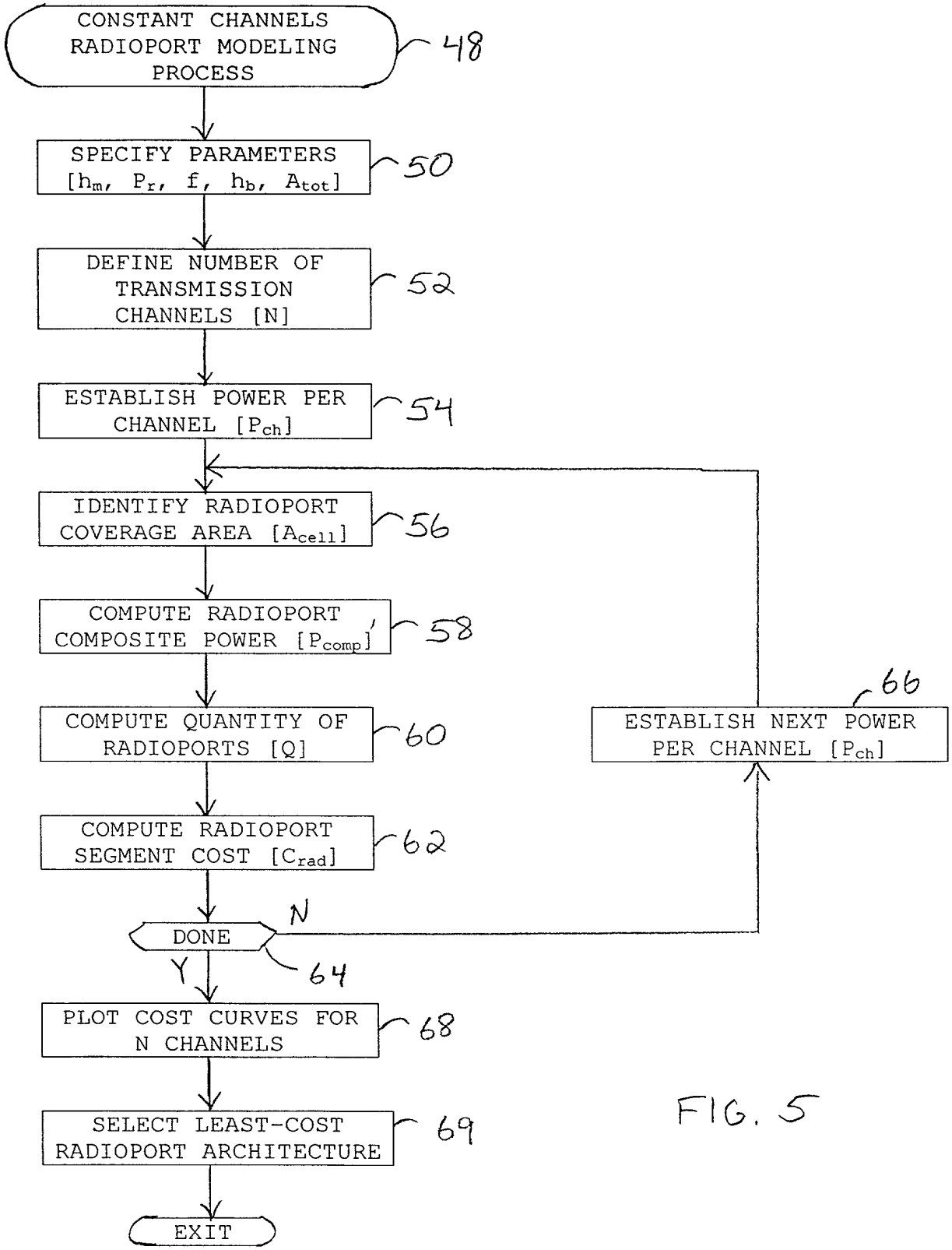
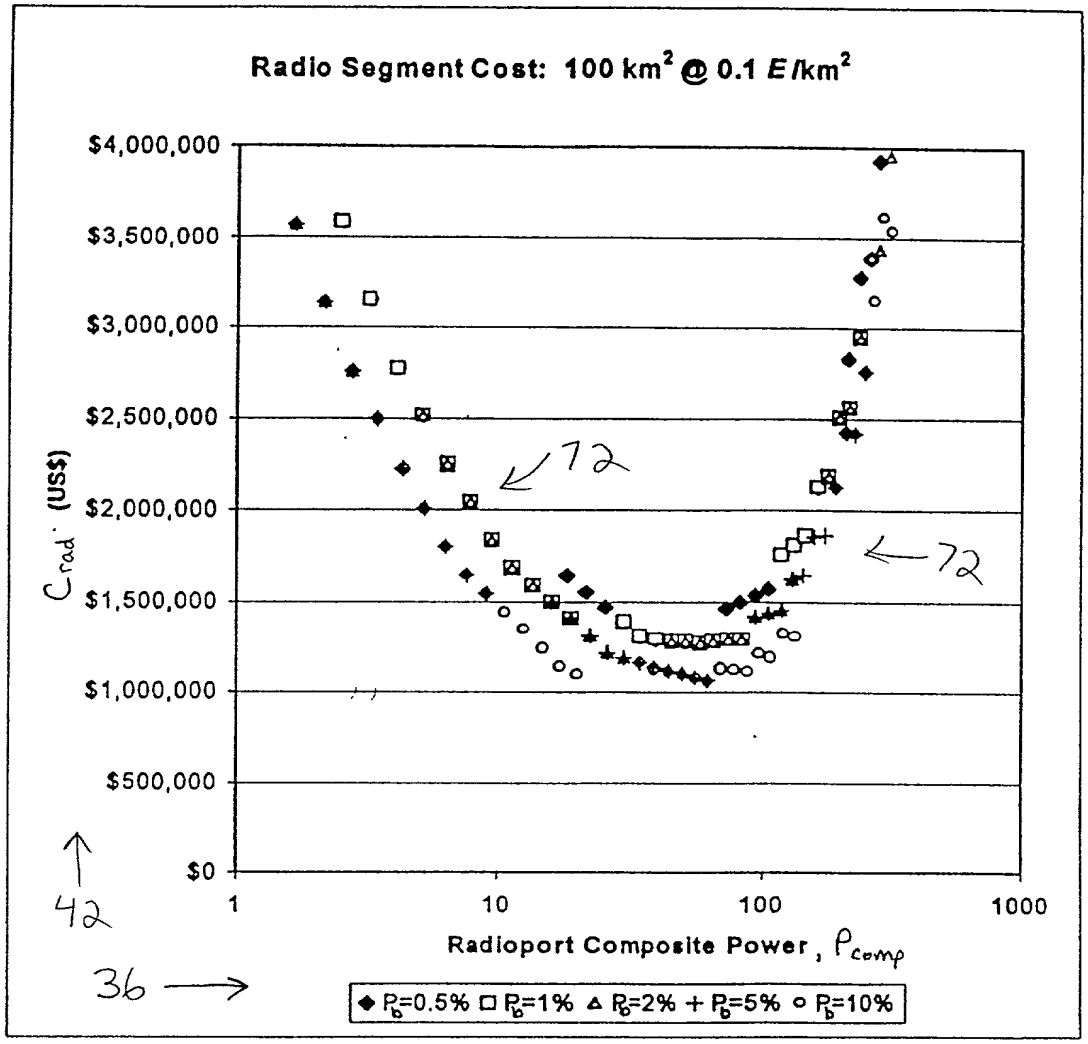
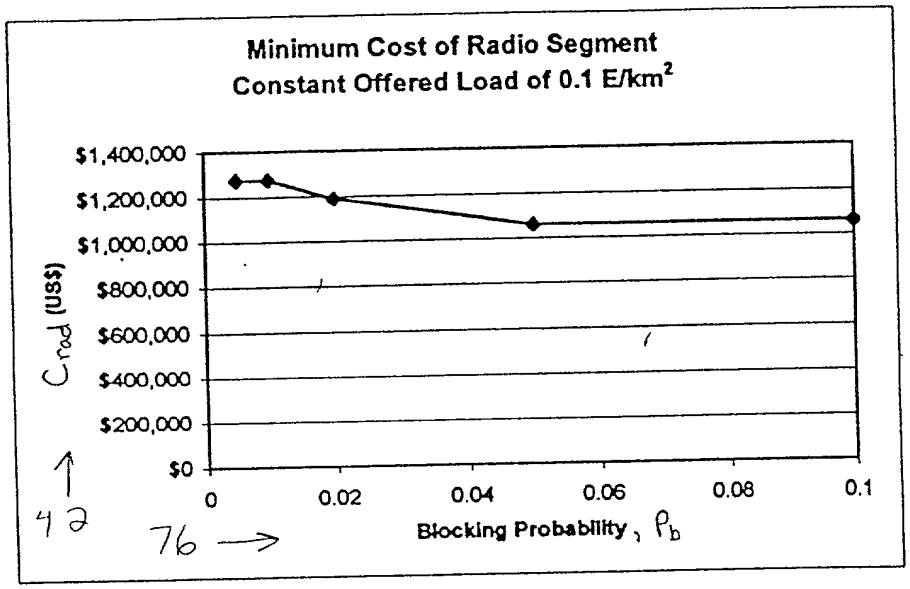

CONSTANT CHANNELS RADIOPORT MODELING PROCESS
48
SPECIFY PARAMETERS [h_m, P_r, f, h_b, A_{tot}]
50
DEFINE NUMBER OF TRANSMISSION CHANNELS [N]
52
ESTABLISH POWER PER CHANNEL [P_{ch}]
54
IDENTIFY RADIOPORT COVERAGE AREA [A_{cell}]
56
COMPUTE RADIOPORT COMPOSITE POWER [P_{comp}]
58
COMPUTE QUANTITY OF RADIOPORTS [Q]
60
COMPUTE RADIOPORT SEGMENT COST [C_{rad}]
62
DONE
N
Y
64
PLOT COST CURVES FOR N CHANNELS
68
SELECT LEAST-COST RADIOPORT ARCHITECTURE
69
EXIT
ESTABLISH NEXT POWER PER CHANNEL [P_{ch}]
66

FIG. 5


Radio Segment Cost: 100 km² @ 0.1 E/km²
$4,000,000
$3,500,000
$3,000,000
$2,500,000
$2,000,000
$1,500,000
$1,000,000
$500,000
$0
C_rad (US$)
72
72
42
1
10
100
1000
Radioport Composite Power, P_comp
36
P_b=0.5% P_b=1% P_b=2% P_b=5% P_b=10%

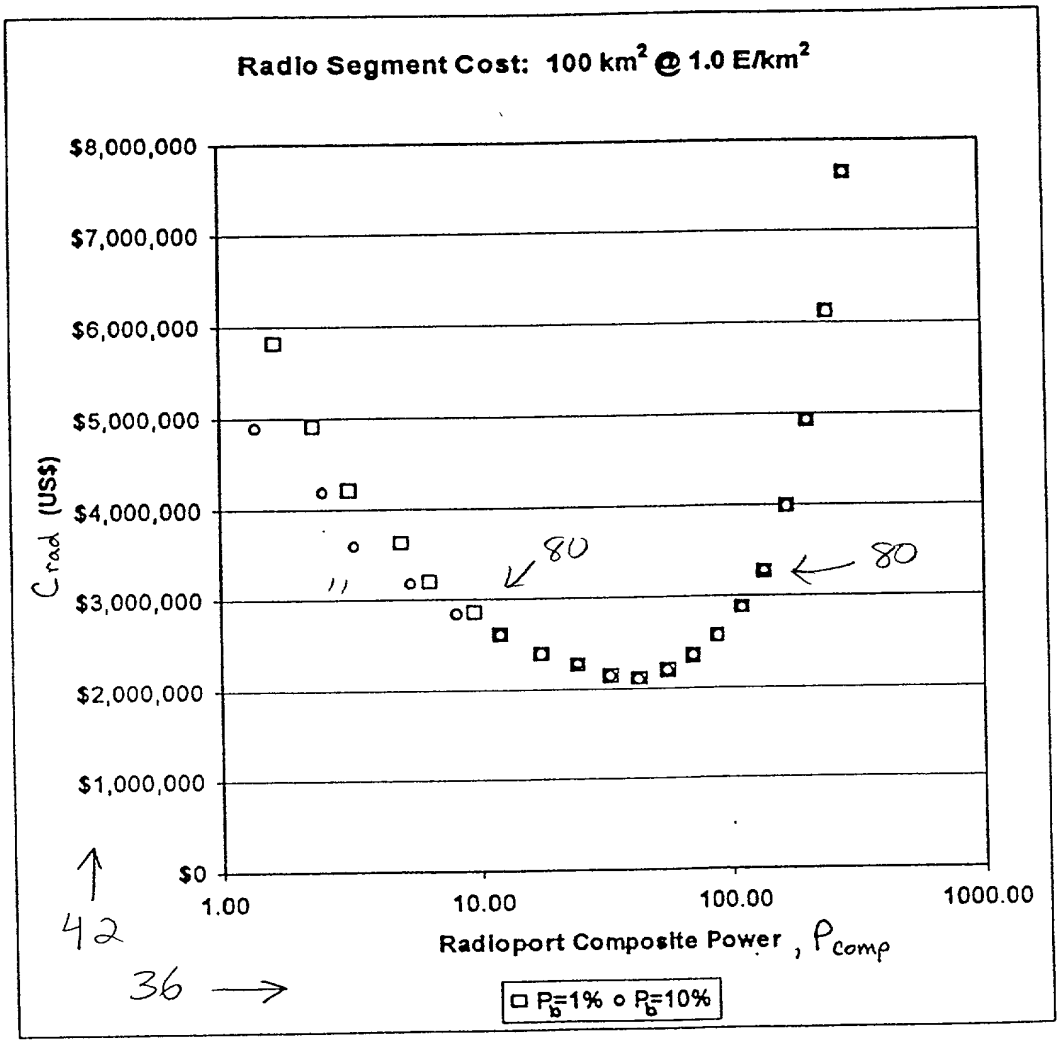
70

FIG. 6


Minimum Cost of Radio Segment
Constant Offered Load of 0.1 E/km²
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
C_rad (US$)
42
0
0.02
0.04
0.06
0.08
0.1
76
Blocking Probability, P_b

74

FIG. 7


Radio Segment Cost: 100 km² @ 1.0 E/km²
$8,000,000
$7,000,000
$6,000,000
$5,000,000
$4,000,000
$3,000,000
$2,000,000
$1,000,000
$0
C rad (US$)
1.00
10.00
100.00
1000.00
Radioport Composite Power , P comp
80
80
42
36
P_b=1% P_b=10%

78

FIG. 8

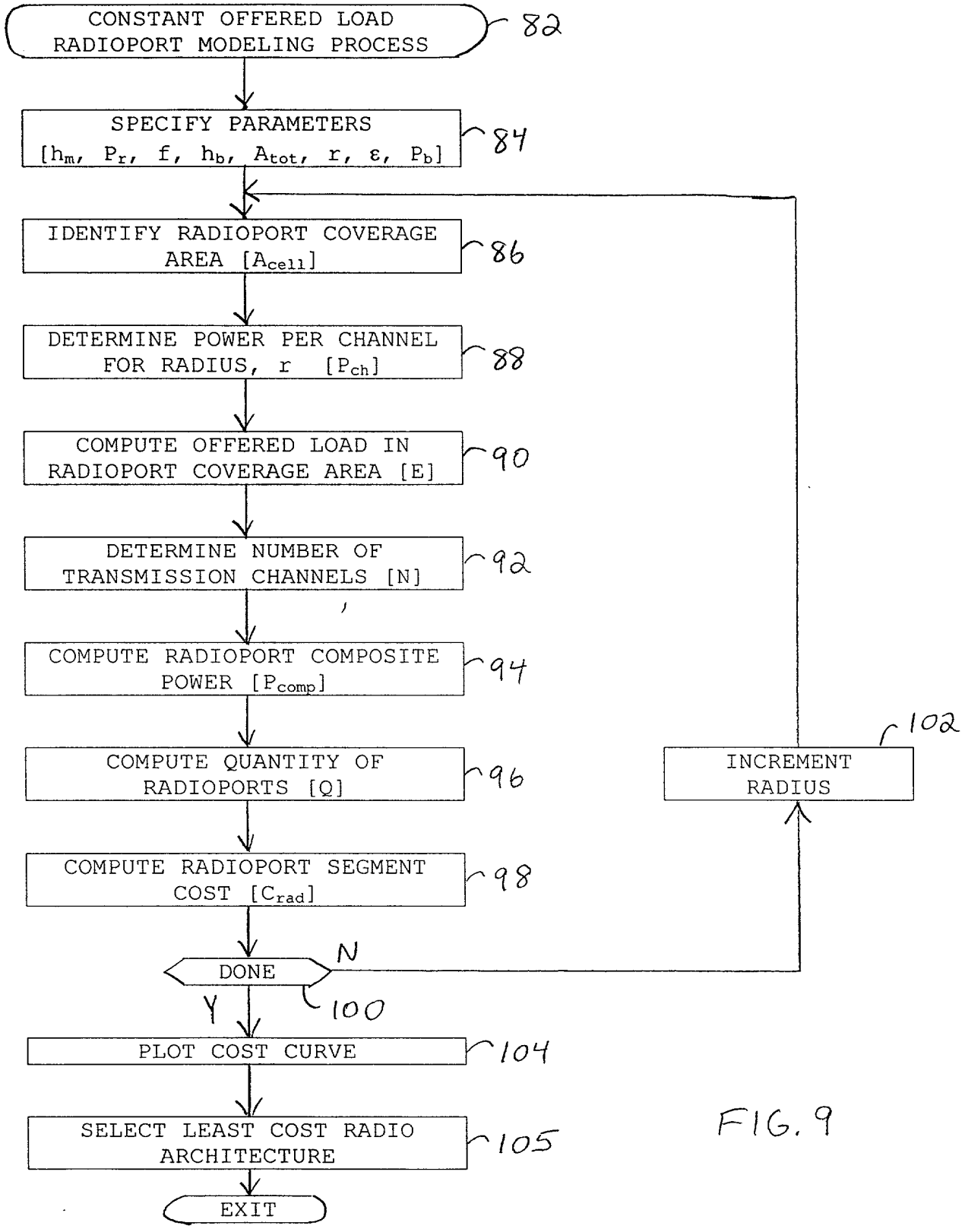

CONSTANT OFFERED LOAD RADIOPORT MODELING PROCESS
82
SPECIFY PARAMETERS [h_m, P_r, f, h_b, A_{tot}, r, ε, P_b]
84
IDENTIFY RADIOPORT COVERAGE AREA [A_{cell}]
86
DETERMINE POWER PER CHANNEL FOR RADIUS, r [P_{ch}]
88
COMPUTE OFFERED LOAD IN RADIOPORT COVERAGE AREA [E]
90
DETERMINE NUMBER OF TRANSMISSION CHANNELS [N]
92
COMPUTE RADIOPORT COMPOSITE POWER [P_{comp}]
94
COMPUTE QUANTITY OF RADIOPORTS [Q]
96
COMPUTE RADIOPORT SEGMENT COST [C_{rad}]
98
DONE
N
Y
100
INCREMENT RADIUS
102
PLOT COST CURVE
104
SELECT LEAST COST RADIO ARCHITECTURE
105
EXIT

FIG. 9

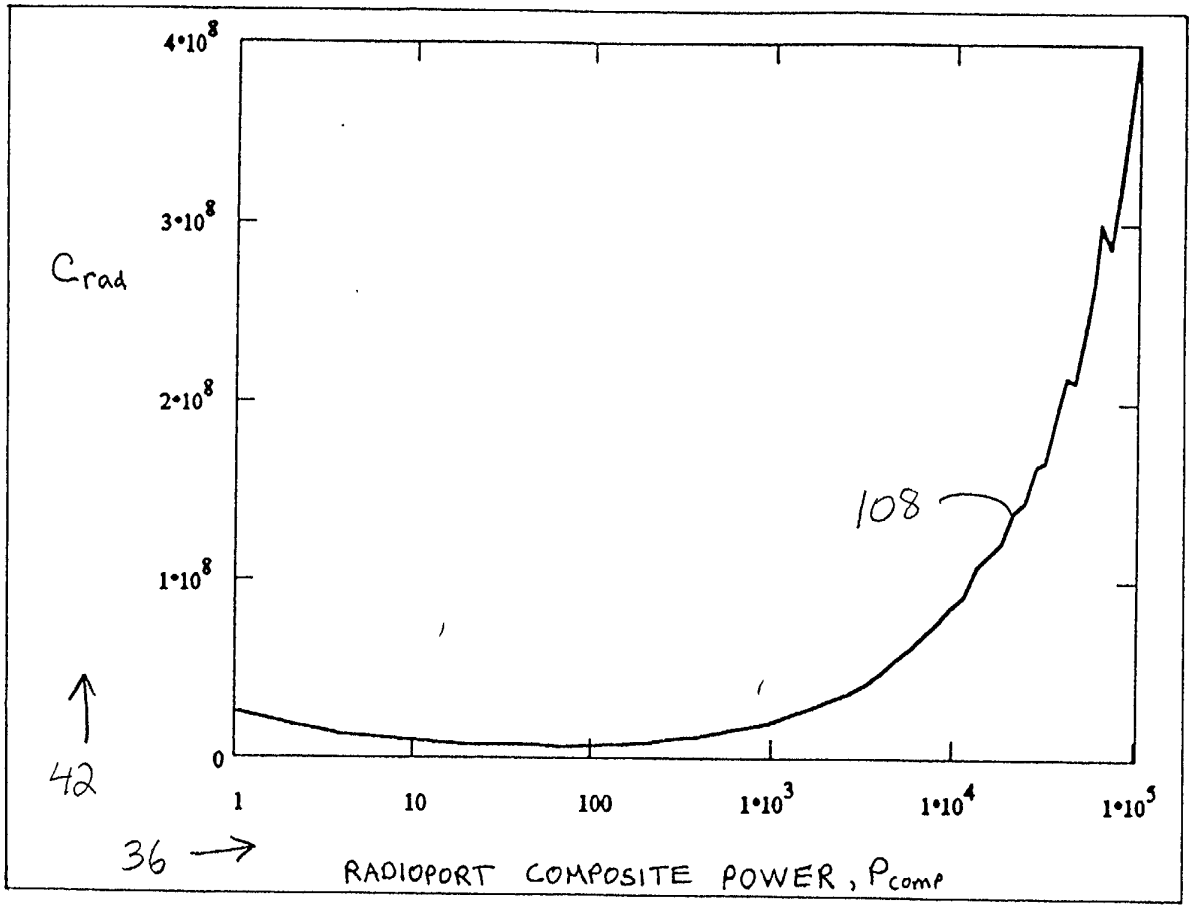


FIG. 10